

Memo

To: Public Health of Seattle and King County
From: Steve Neugebauer, LHG, LEG, PG
CC:
Date: August 22, 2016
Re: Peer Review Comments on the DRAFT King County On-site Sewage System Management Plan, 2016 (2016 OSS Management Plan (Draft v. 8-11)) – Written Testimony for August 23, 2016 Eastgate, WA Meeting

I am a licensed specialty geologist in the state of Washington pursuant to RCW 18.220, RCW 18.235, and 308-15 WAC and I have conducted a peer review of the Public Health of Seattle and King County's Draft "King Count On-site Sewage System Management Plan", dated 2016 (Draft v. 8-11). I this document constitutes my public comments regarding this "Plan" to be accepted as my public testimony regarding the proposed On-site Sewage System Management Plan.

My first overall comment is that this plan is inconsistent with the use of the "scientific method" that is required for all "Plans" that must be based on science and in this case the use of "Best Available Science" as defined in Chapter 365-195 WAC. There are NO scientific citations, references, or substantiation of scientific discussions in this document. The only references in the entire document are to codes, not science. In fact this document does not even reference the USEPA publication *Onsite Wastewater Treatment Systems Manual*, EPA/625/R-00/008, February 2002, Office of Water Office of Research and Development, U.S. Environmental Protection Agency (USEPA OSS Manual, 2002), which is referenced in Title 13 of the King County code and in Chapter 246-272A WAC.

The overall premise of this "draft" document is that onsite septic systems cause pollution of waters of the State and United States and to the state's drinking water aquifers, however, there is no scientific discussions on how this occurs and how the pollutants discussed in this document are exclusively from onsite septic systems. There are zero discussions on other sources of pollution of these resources, many of which are much more significant than all of the onsite septic systems in the state.

Additionally, this draft document seems to suggest that the Public Health of Seattle and King County has been violating the Water Pollution Control Act of 1972 as amended (33 U.S.C. §1251 et seq.), the Washington State Water Pollution Control Act (Chapter 90.48 RCW), and the Safe Drinking Water Act (42 U.S.C. §300f et seq. (1974) as amended) because the Public Health of Seattle and King County have not properly documented and permitted onsite septic systems to a point that the "Public Health" has no information on the onsite septic sewer (OSS) systems within its jurisdiction. In fact the document strongly

suggests that countless OSS systems have been installed that do not even meet the standards in the current or previous versions of the USEPA OSS Manual, 2002.

This draft document suggests that OSS systems are responsible for extensive pollution of estuaries and “marine recovery areas” and in some instances suggests that OSS systems are exclusively responsible for impacting the water quality of the marine waters of the Puget Sound. However, NO scientific information, studies, references, or citations are presented ANYWHERE in this document. Additionally, these assertions are inconsistent with the USEPA OSS Manual, 2002.

Page 2 As the Public Health of Seattle and King County (PHSKC) should know, all OSS systems have boundary conditions and must meet specific siting conditions before they can be approved and permitted. These boundaries and siting conditions are supposed to be based on science, namely the hydrogeologic and geologic sciences, to insure that septic leachate will not affect the water quality of Waters of the United States or State or drinking water quality.

In fact OSS systems are the only sewage systems that are designed to completely recycle water to the ground water aquifer and according to the USEPA OSS Manual, 2002, these systems are 99% effective at removing all pollutants from septic leachate (except in some cases, low levels of nitrates) within the first four feet of treatment in the unsaturated zone (with the biomat being responsible for much of the treatment).

The PHSKC draft document suggests that publically owned treatment works (POTWs) that “treat” sewage are far superior to OSS and that if connections to a POTW are available that OSS systems should not be used, despite the fact that scientifically speaking POTWS are the only sewage treatment systems that discharge directly to waters of the state and United States and do not recycle ANY water to the ground water aquifer.

In reality, POTWs do not treat sewage as effectively or remove as many pollutants as OSS systems do and OSS systems cannot release millions of gallons of untreated sewage to waters of the State and United States as do virtually all of the POTWs located in the State of Washington (including all of the POTWs located within King County or service King County but are actually located in other Counties, such as the Brightwater facility).

The Brightwater treatment plant alone generates 39 million gallons of effluent per day that is discharged directly into the Puget Sound and it is producing 368,000 pounds of BOD and other pollutants per year in this effluent that is discharged into the Puget Sound. (FACT SHEET FOR NPDES PERMIT WA0032247, Brightwater Wastewater Treatment System, June 10, 2011). This is only one of countless other POTWs located on the Puget Sound, including the “older” combined sewage systems that dump millions of gallons of untreated raw sewage into waters of the State and United States (in this case, this is the discharges that only enter Puget Lowlands waters of the State and United States. This does not include all of the raw sewage discharged by Canada into the Puget Sound and since the Puget Sound water flow is clockwise, this means that all of the pollutants from the Canadian POTW systems (none of which include any treatment) is circulated throughout the Puget Sound.

In fact the combined sewer system for the City of Seattle averages 10 million gallons per month of untreated sewage discharge from December 2010 to December 2015 with peak volumes over 100 million gallons per month, this does not include non-combined sewer system discharges (Fact Sheet for NPDES Permit WA0031682, February 18, 2016). In 2014 115.9 million gallons of untreated sewage was discharged to waters in the Puget Lowlands.

Between 2006 and 2010, King County discharged approximately 900 million gallons of raw sewage to waters of the United States on an annual basis through unauthorized discharges involving combined sewer overflows (CSOs), in violation of CWA Section 301. <https://www.epa.gov/enforcement/seattle-washington-and-king-county-washington-settlement>.

Perhaps the PHSKC should be placing its focus on the POTWs rather than the OSS for impacts to “marine recovery areas”, not only for direct discharges of pollutants (raw sewage) from combined sewer systems but also from pollutants from non-combined sewer treatment systems. Additionally, the PHSKC suggests that all OSS systems, especially their connections to the sewer lines serving the OSS system should be inspected by PHSKC staff on a routine basis, however, these connections are no different than the connections from sewer lines connected to a POTW trunk line and in reality, the connections to a POTW trunk line are much more likely to leak and go unnoticed than the connections to a OSS system.

In fact there is a major issue with leaking POTW system connections, transmission lines, and pump stations that the USEPA and the State of California conveniently call “exfiltration” (“Exfiltration in Sewer Systems”, Amick, R. A., EPA/600/R-01/034, December 2000, <http://www.epa.gov/ORD/NRMRL/Pubs/600R01034/600R01034.pdf>). This and other similar documents described the millions of gallons of raw sewage that enters the ground via POTW connections, transmission line, pump stations, and through failing equipment.

In fact SNR has conducted studies on raw sewage releases from the Lakehaven Sewer District sewer system where raw sewage was being directly injected into the ground via a siphon system in the Auburn Area and where this emergent raw sewage was entering a King County storm water conveyance system with an outfall to the Green River. SNR has observed this raw sewage in Federal Way entering relict glacial meltwater channels as unsaturated zone flow that has sufficient volume to create “raw sewage streamflow” into the Puget Sound. And finally, a pump station at Shady Lake in Renton is emerging to the ground surface and is flowing into Shady Lake as raw sewage.

It should also be noted that POTWS are required to receive effluent from industrial and commercial facilities under POTW permits. This means that industrial and commercial waste water is included in POTW sewage, which can contain a myriad of chemicals and other pollutants. OSS systems are NOT allowed to manage any industrial waste water.

The 2015 census estimate for the population of King County is 2,117,125 persons (<http://www.census.gov/quickfacts/table/PST045215/53033>). Figuring that 2.5 people live in an average household this suggests that there are 846,850 households in King County.

There are 85,000 septic systems based on the draft King County On-site Sewage System Management Plan's estimate, this suggests that only 10% of the households in the County have onsite septic systems (it also suggests that 90% of the households discharge to a POTW).

Based on this document, the majority of these OSS systems are located in rural areas of King County. This would certainly not include most marine shoreline areas which are typically densely populated. However, the majority of the POTW systems in King County directly discharge to waters of the state or United States, which includes the Puget Sound. This also includes combined sewer systems which also receive industrial waste water under POTW permits and release millions of gallons of untreated raw sewage to these waters.

The draft King County On-site Sewage System Management Plan does NOT include any scientific data, does not include citations for any assertions of fact in the document, and takes a myopic view of the major sources of pollution of waters of the State and United States and tries to place all of the blame on OSS systems, even though these systems only make up 10% of the sewage in the County (probably much less because septic system owners are very conscious about septic system

loading, an issue that those connected to a POTW do not need to worry about), this draft management plan places 100% of the blame for pollutants in the waters of the state and United States without any factual, scientific data and with no citations for the sources of these assumptions.

In reality, OSS systems that are less than 25 years old rarely fail and in reality the PHSKC should have been monitoring the installation of OSS systems since the early 1970s when the Water Pollution Control Act of 1972 and the Safe Drinking Water Act of 1974 were promulgated (and the State of Washington's Water Pollution Control Act that was also promulgated in the early 1970s). It is unclear why the PHSKC claims to have no data on any of the septic systems installed and permitted in the County and it is unclear how the PHSKC believes that there are that many septic systems that are still functioning that are almost 50 years old.

It is also unclear how much pollutants these "unknown" septic systems contribute compared to all of the other sources of pollutants that are discharged into waters of the United States, especially since OSS systems are not designed to discharge into surface waters. The POTWs discharge 90% of the sewage effluent into the waters of the state and United States for King County alone. This is a DIRECT discharge to these waters.

However, when it comes to "marine recovery areas", ALL potential sources of pollutants must be scientifically quantified and the PHSKC document does not even attempt to quantify any data from any sources (no sources are listed as are no citations included, nor are any scientific references).

All animals produce wastes and wildlife including fish and marine mammals, water fowl, and all other wildlife produce wastes that include fecal coliform, phosphorous, and nitrates (and many other "pollutants"). The amount of wildlife in the Puget Sound far outnumbers the humans and much of this wildlife lives in, on, or around the waters of the State and United States in the Puget Lowlands.

The POTWs account for at least 90% of the sewerage treatment and 100% of the discharges to water in the Puget Lowlands. As previously discussed this includes millions of gallons of untreated sewage each year. OSS systems are NOT designed to directly discharge to any waters of the United States (if they did they would require an NPDES permit). However, all boats and other vessels that use the Puget Sound can discharge raw sewage into these waters as do virtually all combined sewers (POTWs).

It is unclear how OSS systems present the level of threat to surface waters or to ground water that the PHSKC claims they do in the draft document. All OSS systems are designed to treat the septage in the septic tank and in the leach field biomat, with additional treatment occurring as the leachate infiltrates through the sediments in the unsaturated zone; eventually returning the treated water to the ground water aquifer. No other sewer treatment actually recycles water or reaches the level of pollutant removal than a properly designed OSS system.

This is made clearly obvious in the USEPA OSS Manual, 2002 and numerous other scientific publications that the PHSKC could have referenced had it chosen to conduct ANY research. The 2016 OSS Management Plan (Draft v. 8-11) is a meaningless document that does not identify any issues through research, the use of studies, or the use of any science. It is more of a "wish list" of wanting more money to increase regulations of OSS systems for no apparent reason. There is NO cost to benefit analysis, there is no SEPA EIS, and there is no supporting documentation for any of the statements made in this document.

SNR did conduct a thorough peer review of the 2016 OSS Management Plan (Draft v. 8-11) which can be provided to the PHSKC in commented PDF format upon request. However, the comments in this testimony presented in this memorandum summarize much of this peer review.

In general this draft OSS Management Plan is a worthless, unsupported, unscientific, biased, subjective, document that is a waste of taxpayer money and the PHSKC should be embarrassed about even submitting this document to the public for comment.

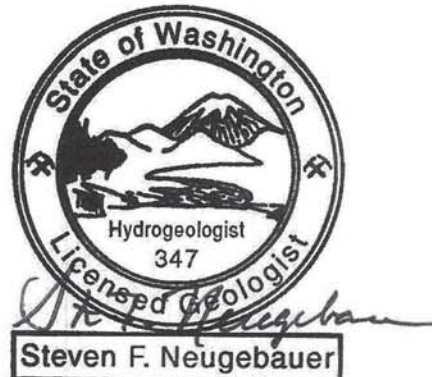
The PHSKC needs to go back to the drawing board and have the necessary scientific studies done that actually meet the requirements of the scientific method and that are unbiased and objective. These studies should focus on all sources of pollutants and recognize that OSS systems have distinct advantages over all other forms of sewage management and are the most ecologically and environmentally sound methods for managing sewage and conserving water resources.

The PHSKC needs to stop vilifying OSS systems are recognize that these systems, that are properly designed and sited, are the least likely method of sewer treatment to impact the environment, especially surface water quality or even ground water quality provided the siting studies are conducted by licensed hydrogeologists as is required in RCW 18.220, RCW 18.235, and 308-15 WAC.

Sincerely,
SNR COMPANY



Steven F. Neugebauer
Principal hydrogeologist and engineering geologist



Page5